

## TENT COOPERATION TRE,

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 20 March 2000 (20.03.00)	Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ETATS-UNIS D'AMERIQUE
International application No. PCT/US99/15807	Applicant's or agent's file reference BB1118A
International filing date (day/month/year) 13 July 1999 (13.07.99)	Priority date (day/month/year) 14 July 1998 (14.07.98)
Applicant CAHOON, Rebecca, E. et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

07 February 2000 (07.02.00)

in a notice effecting later election filed with the International Bureau on:

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Céline Faust Telephone No.: (41-22) 338.83.38
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09/17/2008 29 (SUZO)

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>BB1118A</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 99/15807</b>	International filing date (day/month/year) <b>13/07/1999</b>	(Earliest) Priority Date (day/month/year) <b>14/07/1998</b>
Applicant <b>E. I. DU PONT DE NEMOURS AND COMPANY et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of invention is lacking (see Box II).

## 4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

## 6. The figure of the drawings to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

None of the figures.



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/15807

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

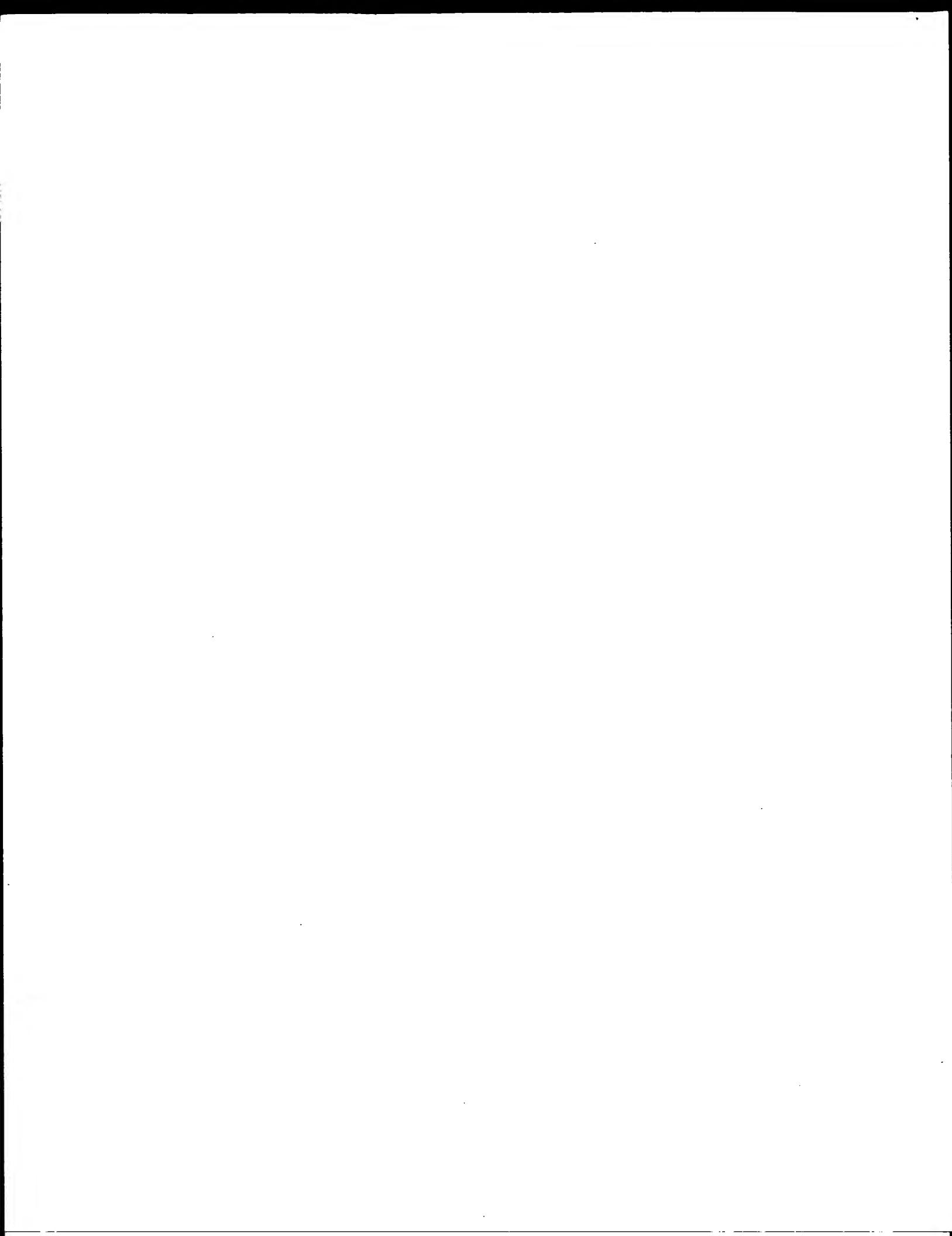
See additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

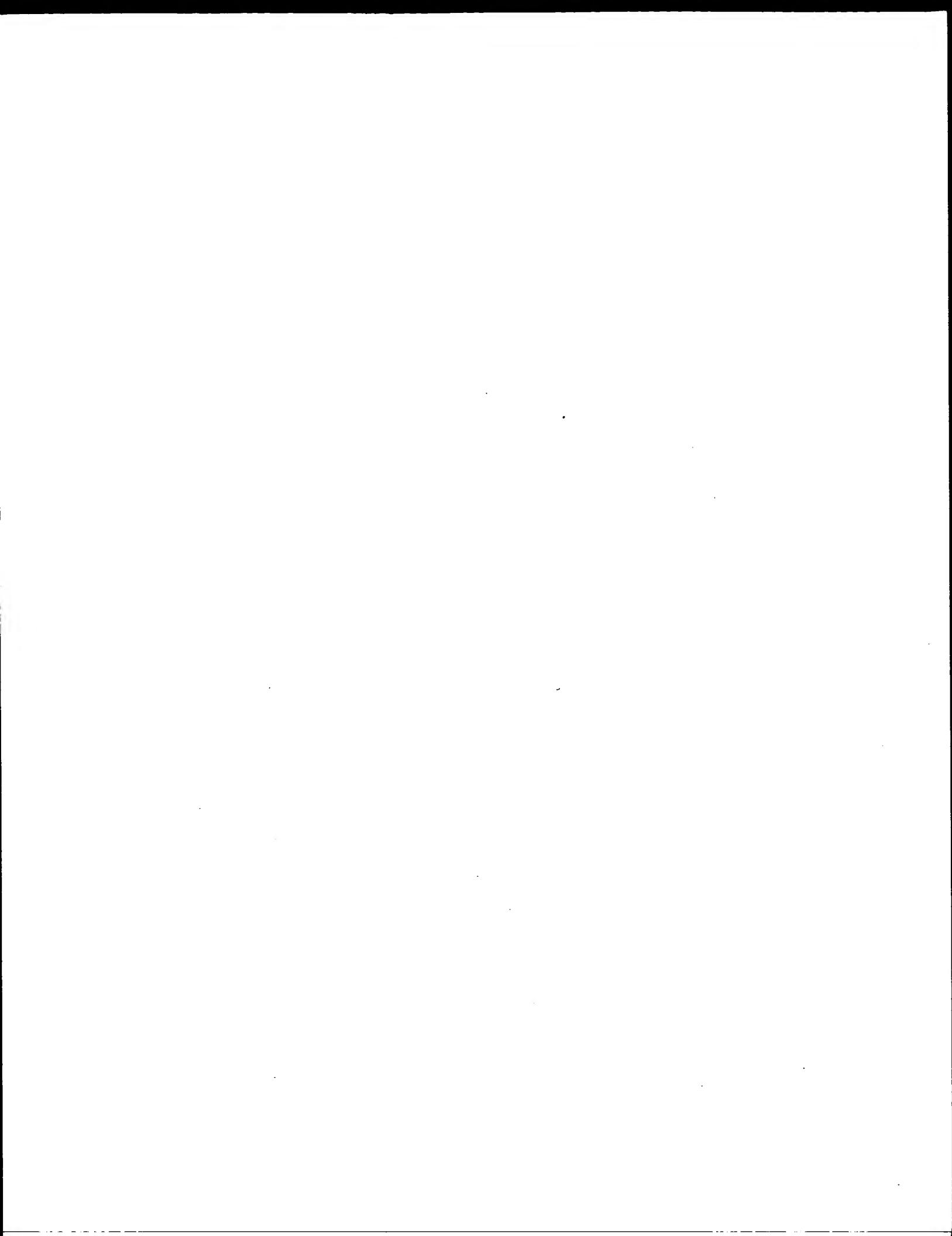
No protest accompanied the payment of additional search fees.



**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-11 partially  
Isolated nucleotide sequence from rice that encodes a peptide with Histone deacetylase activity, namely SEQIDs 1 and 2; the recombinant expression of the same and methods for altering the expression of the enzyme in a host cell and for obtaining related sequences.
2. Claims: 1-11 partially  
Isolated nucleotide sequence from soybean that encodes a peptide with Histone deacetylase activity, namely SEQIDs 3 and 4; the recombinant expression of the same and methods for altering the expression of the enzyme in a host cell and for obtaining related sequences.
3. Claims: 1-11 partially  
Isolated nucleotide sequence from wheat that encodes a peptide with Histone deacetylase activity, namely SEQIDs 5 and 6; the recombinant expression of the same and methods for altering the expression of the enzyme in a host cell and for obtaining related sequences.



## PATENT COOPERATION TREATY

RECEIVED

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

NOV 10 2000

To:

FEULNER, Gregory J.  
E.I. DU PONT DE NEMOURS AND COMPANY  
Legal/Patent Records Center  
1007 Market Street  
Wilmington, Delaware 19898  
ETATS-UNIS D'AMERIQUE

TMR

PCT

PATENT RECORDS  
CENTER

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 02.11.2000

Applicant's or agent's file reference  
BB1118A

## IMPORTANT NOTIFICATION

International application No. PCT/US99/15807	International filing date (day/month/year) 13/07/1999	Priority date (day/month/year) 14/07/1998
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Applicant  
E. I. DU PONT DE NEMOURS AND COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

**4. REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

TRB NOTED

Name and mailing address of the IPEA/

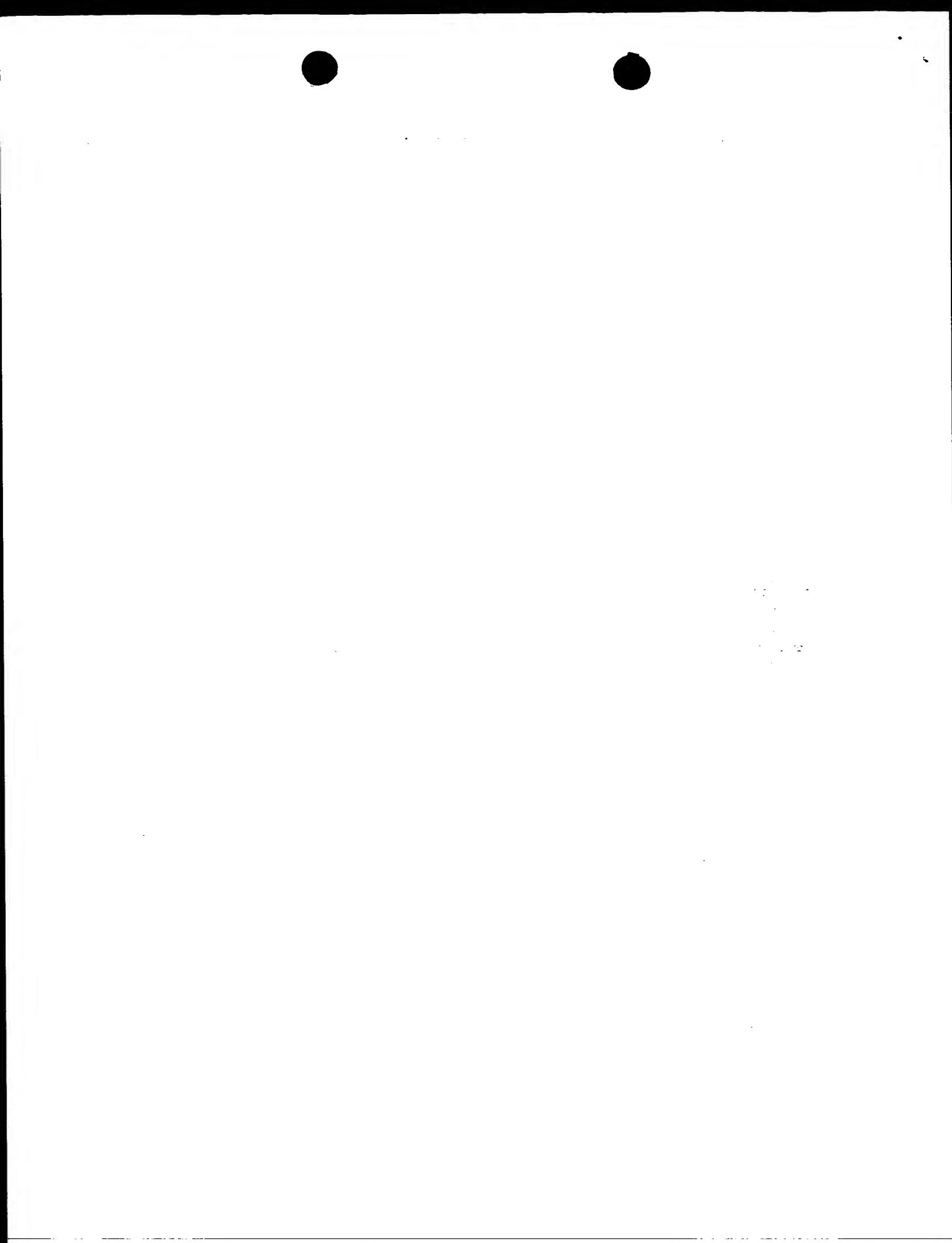
European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer

Emslander, S

Tel. +49 89 2399-8718



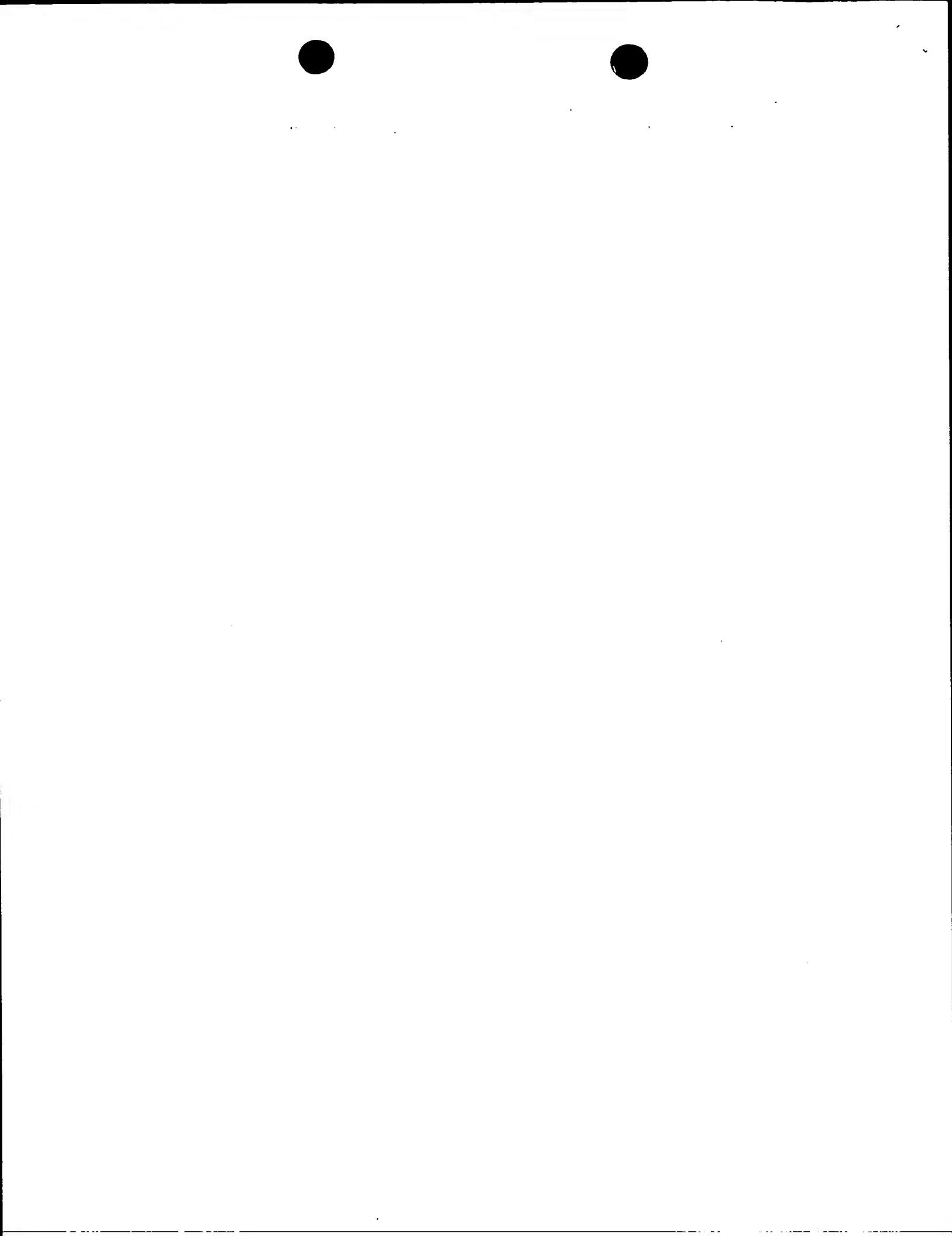


**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
**(PCT Article 36 and Rule 70)**

Applicant's or agent's file reference  BB1118A	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)																
International application No.  PCT/US99/15807	International filing date (day/month/year)  13/07/1999	Priority date (day/month/year)  14/07/1998																	
International Patent Classification (IPC) or national classification and IPC  C12N15/82																			
Applicant  E. I. DU PONT DE NEMOURS AND COMPANY et al.																			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>																			
<p>3. This report contains indications relating to the following items:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: right; padding-right: 5px;">I</td> <td style="width: 90%; padding-left: 5px;"><input checked="" type="checkbox"/> Basis of the report</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">II</td> <td style="padding-left: 5px;"><input type="checkbox"/> Priority</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">III</td> <td style="padding-left: 5px;"><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">IV</td> <td style="padding-left: 5px;"><input checked="" type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">V</td> <td style="padding-left: 5px;"><input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VI</td> <td style="padding-left: 5px;"><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VII</td> <td style="padding-left: 5px;"><input checked="" type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VIII</td> <td style="padding-left: 5px;"><input checked="" type="checkbox"/> Certain observations on the international application</td> </tr> </table>				I	<input checked="" type="checkbox"/> Basis of the report	II	<input type="checkbox"/> Priority	III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input checked="" type="checkbox"/> Lack of unity of invention	V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/> Certain documents cited	VII	<input checked="" type="checkbox"/> Certain defects in the international application	VIII	<input checked="" type="checkbox"/> Certain observations on the international application
I	<input checked="" type="checkbox"/> Basis of the report																		
II	<input type="checkbox"/> Priority																		
III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																		
IV	<input checked="" type="checkbox"/> Lack of unity of invention																		
V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																		
VI	<input type="checkbox"/> Certain documents cited																		
VII	<input checked="" type="checkbox"/> Certain defects in the international application																		
VIII	<input checked="" type="checkbox"/> Certain observations on the international application																		

Date of submission of the demand  07/02/2000	Date of completion of this report  02.11.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Surdej, P  Telephone No. +49 89 2399 7334





# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/15807

## I. Basis of the report

1. This report has been drawn on the basis of (substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

**Description, pages:**

1-21 as originally filed

**Claims, No.:**

1-11 as originally filed

2. The amendments have resulted in the cancellation of:

- the description, pages: \_\_\_\_\_
- the claims, Nos.: \_\_\_\_\_
- the drawings, sheets: \_\_\_\_\_

3.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

**4. Additional observations, if necessary:**

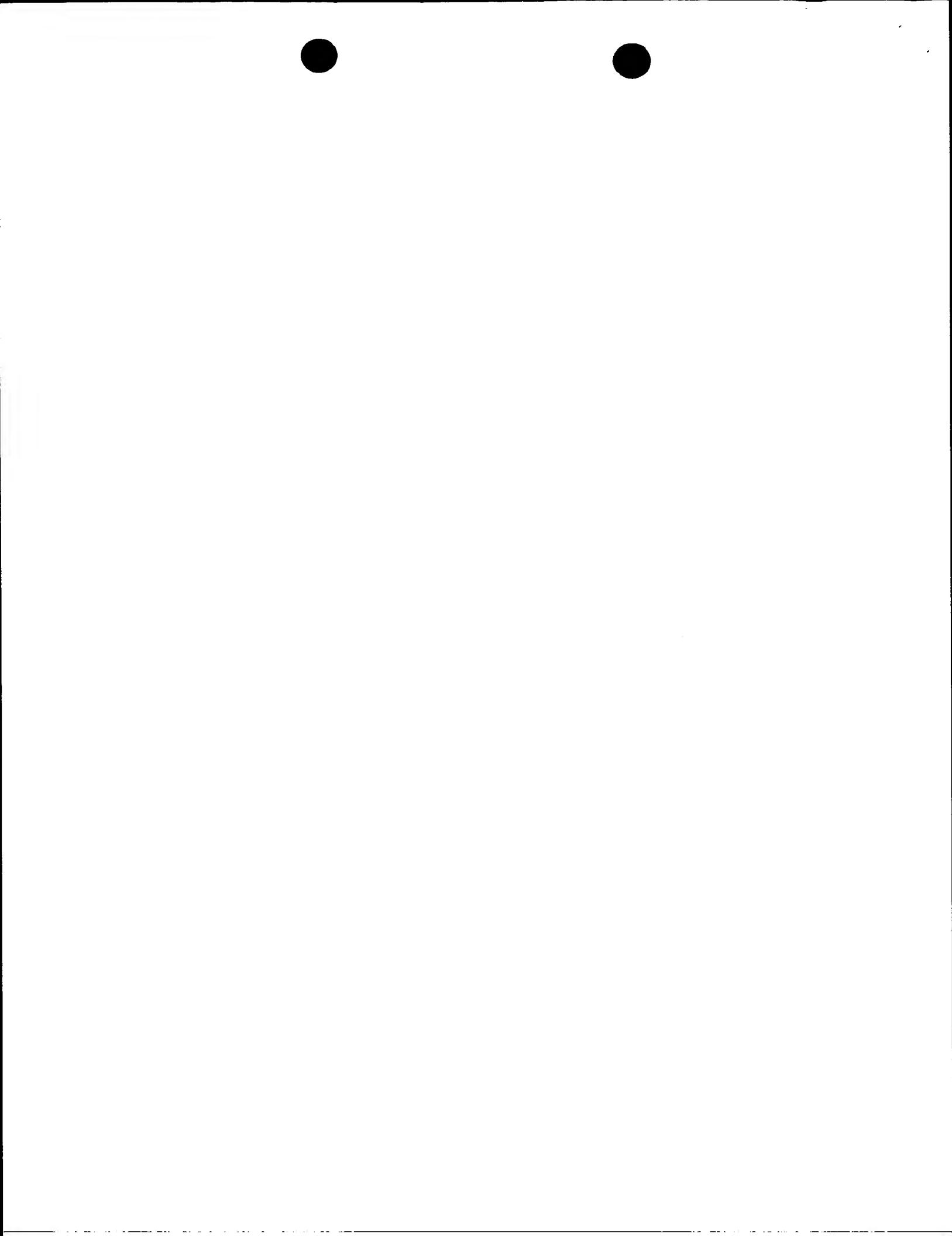
**see separate sheet**

#### **IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees the applicant has:

- restricted the claims.
- paid additional fees.
- paid additional fees under protest.
- neither restricted nor paid additional fees.

2.  This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US99/15807

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

complied with.  
 not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

all parts.  
 the parts relating to claims Nos. 1-11(part).

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims 1-5,7-9
	No:	Claims 6,10-11
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-11
Industrial applicability (IA)	Yes:	Claims 1-11
	No:	Claims

**2. Citations and explanations**

**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/15807

Reference is made to the following documents:

D1: ROSSI V ET AL.: 'Identification and characterization of an RPD3 homologue from maize (*Zea mays L.*) that is able to complement an *rpd2* null mutant of *Saccharomyces cerevisiae*' MOLECULAR & GENERAL GENETICS, vol. 258, May 1998 (1998-05), pages 288-296

D2: ROSSI V ET AL: 'Zea mays putative histone deacetylase RPD3 mRNA' EMBL DATABASE ACCESSION NUMBER AF035815, 9 December 1997 (1997-12-09)

D3: TOMIHAMA T ET AL.: 'Arabidopsis thaliana histone deacetylase mRNA' EMBL DATABASE ACCESSION NUMBER AF014824, 23 August 1997 (1997-08-23)

D4: LUSSER A ET AL.: 'Identification of Maize Histone Deacetylase HD2 as an Acidic Nucleolar Phosphoprotein' SCIENCE, vol. 277, 4 July 1997 (1997-07-04), pages 88-91

D5: BROSCH G ET AL.: 'Purification and Characterization of a High Molecular Weight Histone Deacetylase Complex(HD2) of Maize Embryos' BIOCHEMISTRY, vol. 35, no. 49, 10 December 1996 (1996-12-10), pages 15907-15914

D6: RANSOM RF, WALTON JD: 'Histone Hyperacetylation in Maize in Response to Treatment with HC-Toxin or infection by the Filamentous Fungus *Cochliobolus carbonum*' PLANT PHYSIOLOGY, vol. 115, no. 3, November 1997 (1997-11), pages 1021-1027

D7: RUNDLETT ET AL.: 'HDA1 and RDP3 are members of distinct yeast histone deacetylase complexes that regulate silencing and transcription' PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, vol. 93, December 1996 (1996-12), pages 14503-14508

D8: WADE P A ET AL: 'Histone acetylation: chromatin in action' TIBS TRENDS IN BIOCHEMICAL SCIENCES, EN, ELSEVIER PUBLICATION, CAMBRIDGE, vol. 22, no. 4, page 128-132

**Introduction**

The application discloses nucleic acid fragments encoding histone deacetylase 1 proteins (HD1) from rice, soybean and wheat, methods and uses thereof. Sequences



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET

International application No. PCT/US99/15807

SEQ ID NO:1 and 2 are respectively the cDNA and amino acid sequences from rice (*Oryza sativa*) disclosed in the application.

**Re Item I**

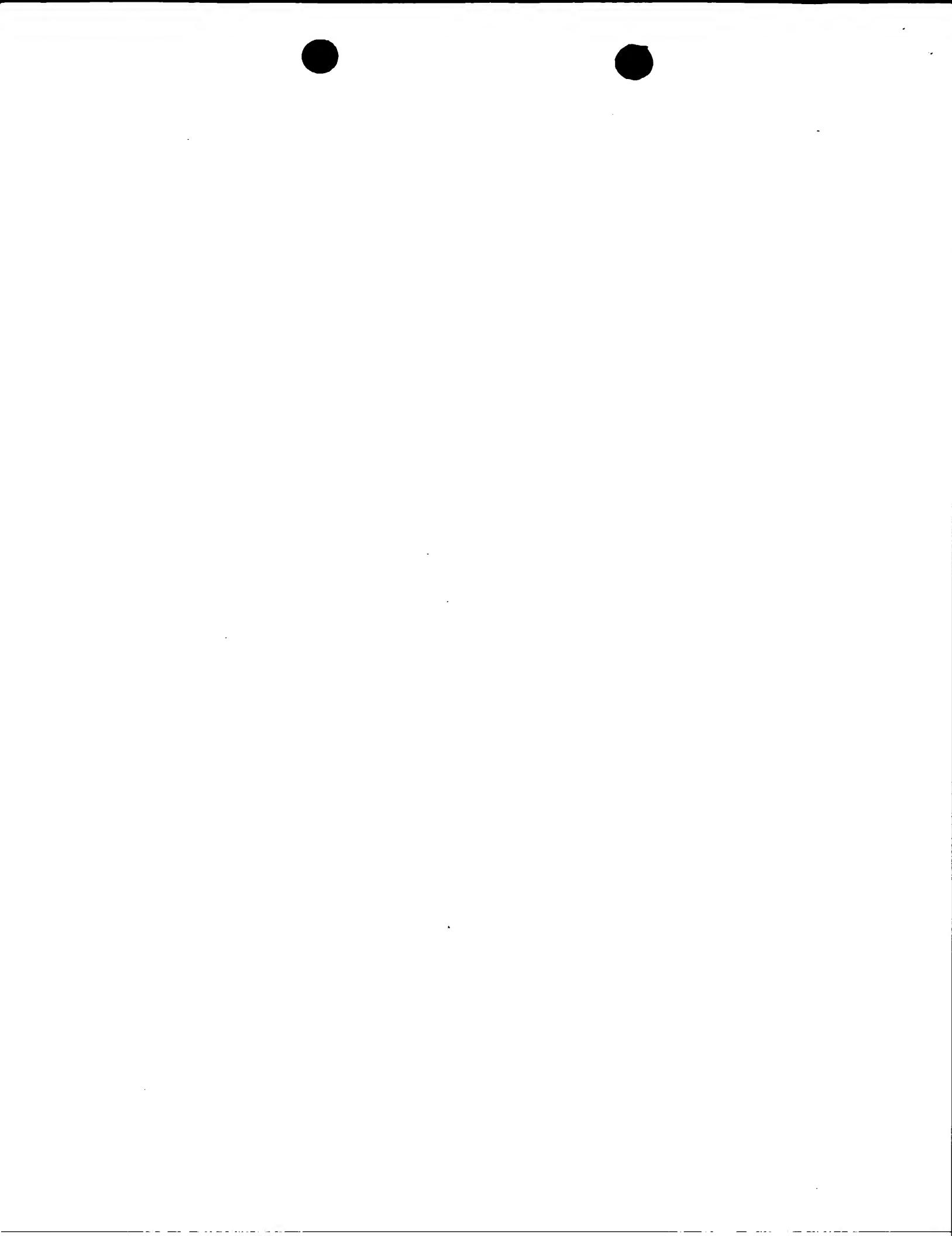
**Basis of the opinion**

1. The pages 1-10 of the listing of the sequences 1-8 filed with the international application are taken into account for the establishment of this opinion.
2. Sequence comparisons referred to in this opinion are already known to the applicant.

**Re Item IV**

**Lack of unity of invention**

3. Histone deacetylases 1 are characterized from a variety of organisms (see for example D5, page 15907, 2nd column, 2nd paragraph). Histone deacetylases are known from *Zea mays*, *Saccharomyces cerevisiae*, mouse and *Drosophila* (D1: abstract; page 288, 2nd column, last paragraph; page 289, 1st column, 2nd paragraph). D2 and D3 disclose histone deacetylase sequences from *Zea mays* and *Arabidopsis thaliana*, respectively. D4, D5 and D8 disclose Human (D8: page 130, 1st column, 2nd paragraph, see reference) and maize (D4: page 88; D5: page 15907, 2nd column, 2nd paragraph) histone deacetylases. From D6 histone deacetylase are known from *Physarum polycephalum*, maize and chicken (page 1021, 2nd column, 3rd paragraph). Yeast histone deacetylases are also known from D7 (see for example page 14508, 3rd paragraph). Histone deacetylases 1 are well known from the prior art and are therefore not new.
4. The only common technical feature linking the nucleic acid fragments and proteins referred to in claims 1 and 6 is that they encode **putative histone deacetylases**.  
1. Considering the fact that histone deacetylase 1 genes are known from the prior art in view of D1-D8 (see point 3), no (new and inventive) special technical feature exists in the sense of Rule 13.2 PCT that links the members of the group of sequences referred to in claim 1. Therefore, the said inventions are not so linked as to form a single general inventive concept and the requirements of Rule 13.1



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/15807

PCT are not met.

5. **3** separate inventions are therefore identified in the present application:
  1. Claims 1-11 (all partially): Isolated nucleic acids and polypeptides from rice encoding putative histone deacetylase 1 corresponding to SEQ ID No. 1 and 2, methods and uses thereof,
  2. Claims 1-11 (all partially): As for invention 1, but concerning soybean sequences defined by SEQ ID No. 3 and 4,
  3. Claims 1-11 (all partially): As for invention 1, but concerning wheat sequences defined by SEQ ID No. 5 and 6.

In response to the invitation mailed on 3 July 2000, the applicant decided neither to restrict nor to pay additional fees. Therefore, the International Preliminary Examination Report is established on the **first** invention identified by the International Preliminary Examination Authority.

**Re Item V**

Reasoned statement under Article 35(2) PCT with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

**Novelty (Art. 33(1) and (2) PCT)**

6. **Claims 6 and 10-11** are not new in the light of documents D1-D3. Histone deacetylase 1 polypeptides which have a substantial portion of the amino acid sequence set forth in sequence SEQ ID No. 2 are disclosed in D1 and D3 (see sequence comparison). A histone deacetylase 1 maize sequence having 81.7% identity in a 492 amino acids overlap is disclosed in D1 and D2. A histone deacetylase 1 arabidopsis sequence having 76.8% identity in a 495 amino acids overlap is disclosed in D3. Thus, claims 6 and 10-11 lack novelty.

**Inventive step (Art. 33 (1) and (3) PCT)**

7. **Claim 1** appears to be new but does not involve an inventive step. The technical problem of the application is the provision of further nucleic acid sequences encoding histone deacetylase 1. The solution given in the application is the



provision of a rice histone deacetylase nucleic acid sequence (SEQ ID No.1 and the corresponding amino acid sequence SEQ ID No. 2). The closest prior art documents D1 discloses the isolation of a histone deacetylase 1 sequence from maize. D3 discloses the sequence of histone deacetylase 1 from arabidopsis. From D3, it is clear that other plant species than maize have a histone deacetylase 1 gene. Therefore, it is obvious to look for histone deacetylase 1 in other plants like rice and the person skilled in the art would arrive to the solution of the present application without an inventive step by using the sequences disclosed in D1-D3. Hence, no inventive step can be acknowledged for claim 1.

8. **Claims 2-5 and 7-9** referred to obvious characteristics and uses of an isolated nucleic acid sequence which would be considered by the person skilled in the art without the exercise of an inventive skill. Thus, said claims lack an inventive step.

**Re Item VII**

Certain defects in the international application

9. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D8 is not mentioned in the description, nor are these documents identified therein.
10. Documents reflecting the prior art described on page 1, lines 28-34 are not identified in the description (Rule 5.1(a)(ii) PCT).
11. The expressions such as "incorporated herein by reference", for example on page 3, line 7 seem to imply that other subject matters are incorporated by reference, however the application should be self-understanding (Art. 5 and 6, Rule 9.1 iv) and Preliminary Examination Guidelines Ch. II-4.17 PCT).
12. Vague statements such as "spirit of the invention" on page 14, line 7 implies that the subject matter of the invention may be different from what is defined by the claims, thereby resulting in lack of clarity (Art. 6 PCT) when used to interpret them (see also the PCT Preliminary Examination Guidelines Ch. III-4.3a).



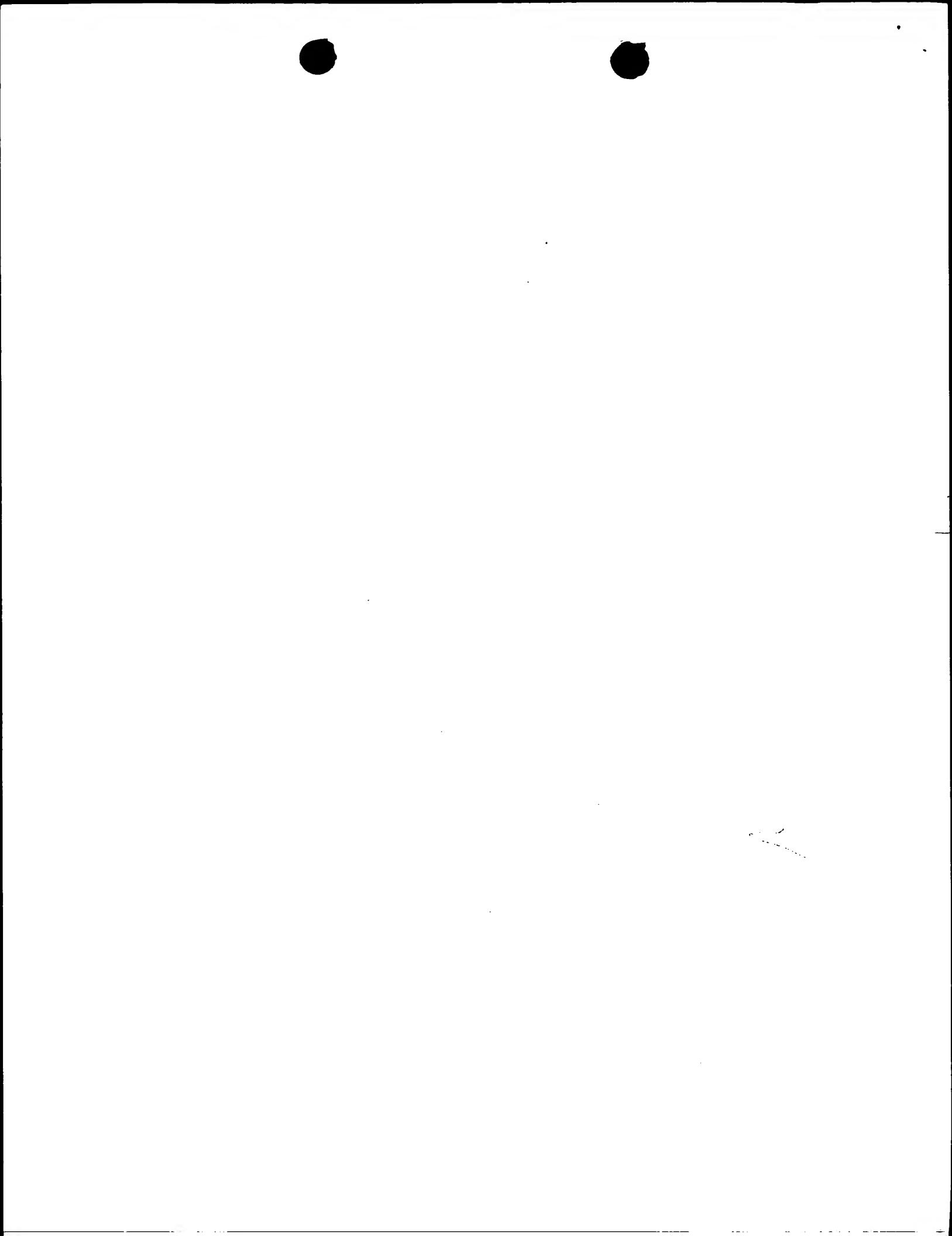
**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/15807

**Re Item VIII**

Certain observations on the international application

13. In **claim 1 a**, the length of the amino acid sequence encoded by the isolated nucleic acid fragment is not given. Thus, the said claim lacks clarity (Art. 6 PCT).
14. The term "similar" is unclear because it cannot be seen which sequences fall into the scope of **claim 1** since changes at any amino acid position with chemically equivalent amino acid is considered. Therefore, the scope of claim 1 is not clear (Art. 6 PCT).
15. The subject-matter of **claim 7** is not sufficiently disclosed and is not supported by description since no example of alteration of chromatin associated protein expression in a host cell is disclosed in the application (Art. 5 and 6 PCT).
16. In **claims 6, 8 and 9**, the expression "substantial portion of" is not clear since the portion of the sequences referred to is not defined. Hence, the scope of said claims is not clear (Art. 6 PCT).
17. It is clear from the present application that the function of the amino acid or nucleic sequences referred to, namely histone deacetylase 1, is an essential feature of the invention. Since independent **claims 10 and 11** do not contain this feature (and instead referred to chromatin associated protein), they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.
18. In **claim 9**, the length of the segment of the oligonucleotide primer which corresponds to a portion of the sequence SEQ ID No.1 is not defined. Thus, the scope of claim 9 is unclear (Art. 6 PCT).



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/15807

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C12N15/82 C12N15/29 C12N15/55 C12N9/16 C12N5/10  
C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ROSSI V ET AL.: "Identification and characterization of an RPD3 homologue from maize (Zea mays L.) that is able to complement an rpd2 null mutant of <i>Saccharomyces cerevisiae</i> " MOLECULAR & GENERAL GENETICS, vol. 258, May 1998 (1998-05), pages 288-296, XP002110438 the whole document ---	1-11
A	ROSSI V ET AL: "Zea mays putative histone deacetylase RPD3 mRNA" EMBL DATABASE ACCESSION NUMBER AF035815, 9 December 1997 (1997-12-09), XP002120446 the whole document ---	1-11 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

23 November 1999

Date of mailing of the international search report

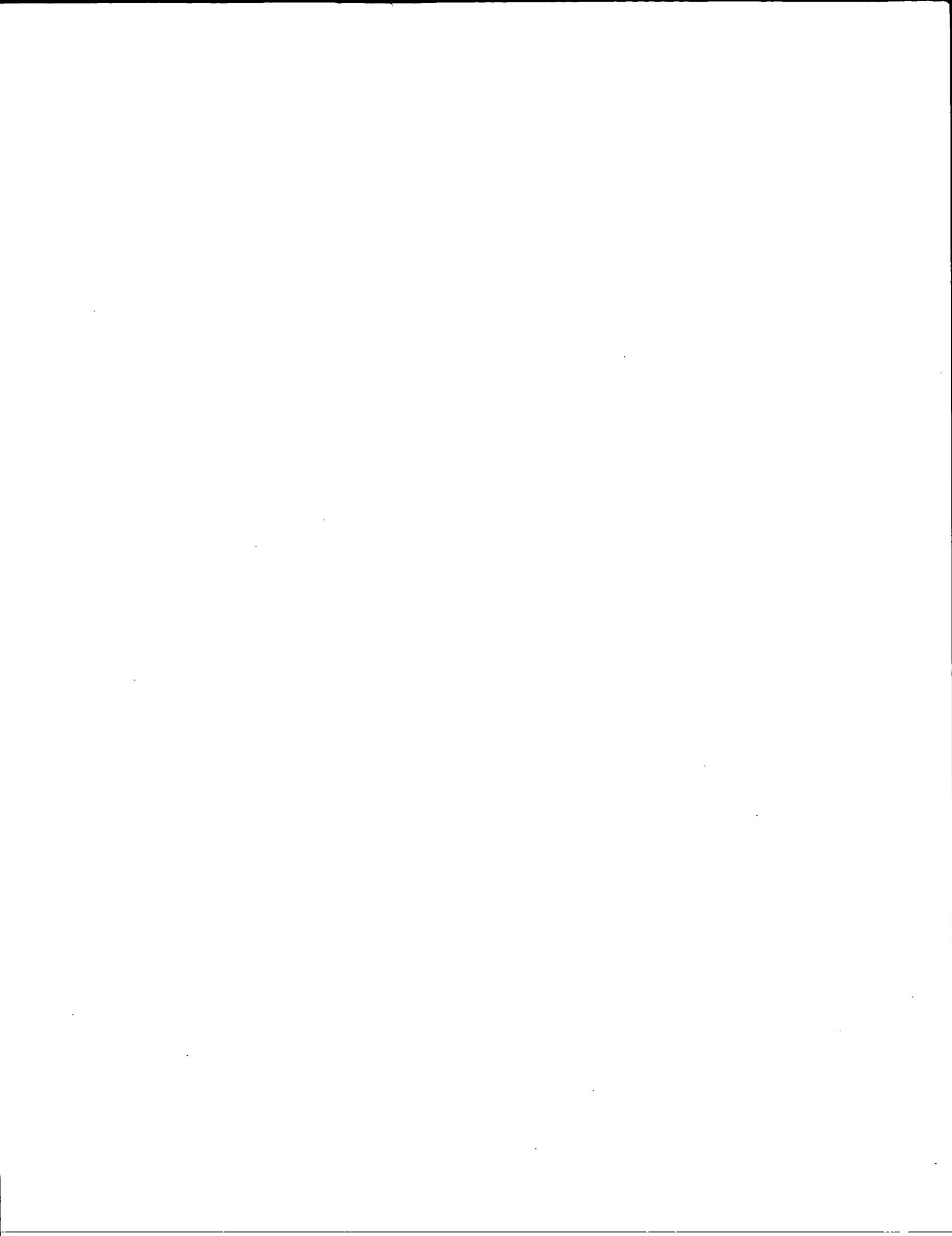
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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Holtorf, S



## INTERNATIONAL SEARCH REPORT

International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	TOMIHAMA T ET AL.: "Arabidopsis thaliana histone deacetylase mRNA" EMBL DATABASE ACCESSION NUMBER AF014824, 23 August 1997 (1997-08-23), XP002120447 the whole document ---	1-11
A	LUSSER A ET AL.: "Identification of Maize Histone Deacetylase HD2 as an Acidic Nucleolar Phosphoprotein" SCIENCE, vol. 277, 4 July 1997 (1997-07-04), pages 88-91, XP002110443 the whole document ---	1-11
A	BROSCH G ET AL.: "Purification and Characterization of a High Molecular Weight Histone Deacetylase Complex(HD2) of Maize Embryos" BIOCHEMISTRY, vol. 35, no. 49, 10 December 1996 (1996-12-10), pages 15907-15914, XP002119342 the whole document ---	1-11
A	RANSOM RF, WALTON JD: "Histone Hyperacetylation in Maize in Response to Treatment with HC-Toxin or infection by the Filamentous Fungus Cochliobolus carbonum" PLANT PHYSIOLOGY, vol. 115, no. 3, November 1997 (1997-11), pages 1021-1027, XP002111097 the whole document ---	1-11
A	RUNDLETT ET AL.: "HDA1 and RDP3 are members of distinct yeast histone deacetylase complexes that regulate silencing and transcription" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, vol. 93, December 1996 (1996-12), pages 14503-14508, XP002110440 the whole document ---	1-11
A	WADE P A ET AL: "Histone acetylation: chromatin in action" TIBS TRENDS IN BIOCHEMICAL SCIENCES, EN, ELSEVIER PUBLICATION, CAMBRIDGE, vol. 22, no. 4, page 128-132 XP004058546 ISSN: 0968-0004 -----	1-11

